09/306,749
8-12-00

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Search Results - Record(s) 11 through 14 of 14 returned.

☐ 11. Document ID: US 5705348 A

L1: Entry 11 of 14 File: USPT Jan 6, 1998

US-PAT-NO: 5705348
DOCUMENT-IDENTIFIER: US 5705348 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: January 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 435/5, 435/91.1, 435/91.2, 536/23.1, 536/24.3, 536/24.32, 536/24.33

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

30 Claims, 30 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 4

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 12. Document ID: US 5591578 A

L1: Entry 12 of 14 File: USPT Jan 7, 1997

US-PAT-NO: 5591578
DOCUMENT-IDENTIFIER: US 5591578 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: January 7, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon F.	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 536/23.1

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of the nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes. Hybridization assays employing these complexes are disclosed.

20 Claims, 29 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 4

☐ 13. Document ID: WO 9640712 A1, AU 9661662 A, EP 871642 A1, US 5824473 A

L1: Entry 13 of 14 File: DWPI Dec 19, 1996

DERWENT-ACC-NO: 1997-099909
DERWENT-WEEK: 199944

TITLE: Nucleic acids comprising electron transfer moieties - used to detect target nucleic acids, enhances signal-to-noise ratio of detection reaction

INVENTOR: FRASER, S E; KAYYEM, J F ; MEADE, T J

PRIORITY-DATA:

1995US-0475051	June 7, 1995
1993US-0166036	December 10, 1993

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9640712 A1	December 19, 1996	E	066	C07H021/00
AU 9661662 A	December 30, 1996	N/A	000	N/A
EP 871642 A1	October 21, 1998	E	000	C07H021/00
US 5824473 A	October 20, 1998	N/A	000	C12Q001/68

INT-CL (IPC): C07H 21/00; C07H 21/02; C07H 21/04; C12Q 1/68; C12Q 1/70

ABSTRACTED-PUB-NO: US 5824473A
BASIC-ABSTRACT:

The following are claimed: (1) a compsn. (Aa) comprising a single stranded (ss) nucleic acid contg. at least 1 electron donor moiety (EDM) and at least 1 electron acceptor moiety (EAM), where the EDM and EAM are covalently attached to the nucleic acid, and at least 1 of the EDM or EAM is attached to the terminal base of the nucleic acid; (2) a compsn. (Ab) comprising a first ss nucleic acid contg. at least 1 EDM and a second ss nucleic acid contg. at least 1 EAM, where at least 1 of the EDM or EAM is attached to the terminal base of the nucleic acid; (3) a ss nucleic acid contg. at least 1 EDM and at least 1 EAM, where at least 1 of the EDM or EAM is an organic electron transfer moiety, and the EDM and EAM are covalently attached to a ribose of the ribose-phosphate backbone of the nucleic acid; (4) a compsn. comprising: (a) a first 2'-amino modified nucleoside covalently attached to a solid support; (b) additional nucleosides covalently attached to the 5' position of the first modified nucleoside, forming an oligonucleotide; and (c) a second 2'-amino modified nucleoside incorporated into the oligonucleotide; and (5) a compsn. comprising an electrode with a covalently attached (CH2)16-nucleic acid.

USE - The compsns. (Aa) and (Ab) may be used for detecting a target sequence in a nucleic acid sample (claimed).

ADVANTAGE - The fast rates of electron transfer observed in the compsns. of the invention means that time resolution can greatly enhance the signal to noise results of monitors based on absorbance, fluorescence and electronic current. The fast rates of electron transfer result in high signals and stereotyped delays between electron transfer initiation and completion. Between two and four orders of magnitude improvements in signal-to-noise may be achieved by amplifying signals of particular delays, such as through the use of pulsed initiation of electron transfer and 'lock-in' amplifiers of detection.
ABSTRACTED-PUB-NO:

WO 9640712A EQUIVALENT-ABSTRACTS:

The following are claimed: (1) a compsn. (Aa) comprising a single stranded (ss) nucleic acid contg. at least 1 electron donor moiety (EDM) and at least 1 electron acceptor moiety (EAM), where the EDM and EAM are covalently attached to the nucleic acid, and at least 1 of the EDM or EAM is attached to the terminal base of the nucleic acid; (2) a compsn. (Ab) comprising a first ss nucleic acid contg. at least 1 EDM and a second ss nucleic acid contg. at least 1 EAM, where at least 1 of the EDM or EAM is attached to the terminal base of the nucleic acid; (3) a ss nucleic acid contg. at least 1 EDM and at least 1 EAM, where at least 1 of the EDM or EAM is an organic electron transfer moiety, and the EDM and EAM are covalently attached to a ribose of the ribose-phosphate backbone of the nucleic acid; (4) a compsn. comprising: (a) a first 2'-amino modified nucleoside covalently attached to a solid support; (b) additional nucleosides covalently attached to the 5' position of the first modified nucleoside, forming an oligonucleotide; and (c) a second 2'-amino modified nucleoside incorporated into the oligonucleotide; and (5) a compsn. comprising an electrode with a covalently attached (CH2)16-nucleic acid.

USE - The compsns. (Aa) and (Ab) may be used for detecting a target sequence in a nucleic acid sample (claimed).

ADVANTAGE - The fast rates of electron transfer observed in the compsns. of the invention means that time resolution can greatly enhance the signal to noise results of monitors based on absorbance, fluorescence and electronic current. The fast rates of electron transfer result in high signals and stereotyped delays between electron transfer initiation and completion. Between two and four orders of magnitude improvements in signal-to-noise may be achieved by amplifying signals of particular delays, such as through the use of pulsed initiation of electron transfer and 'lock-in' amplifiers of detection.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 14. Document ID: WO 9515971 A2, AU 9512152 A, WO 9515971 A3, EP 733058 A1, US

5591578 A, JP 09506510 W, US 5705348 A, US 5770369 A, US 5780234 A, AU 703329 B

L1: Entry 14 of 14 File: DWPI Jun 15, 1995

DERWENT-ACC-NO: 1995-224283
DERWENT-WEEK: 199944

TITLE: Single stranded nucleic acids contg. electron donor and acceptor moieties - useful as bio-conductors and diagnostic probes

INVENTOR: FRASER, S E; KAYYEM, J F ; MEADE, T J

PRIORITY-DATA:

1993US-0166036	December 10, 1993
1996US-0709265	September 6, 1996
1995US-0475051	June 7, 1995
1996US-0660534	June 7, 1996
1996US-0709263	September 6, 1996

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9515971 A2	June 15, 1995	E	059	C07H021/00
AU 9512152 A	June 27, 1995	N/A	000	N/A
WO 9515971 A3	August 3, 1995	N/A	000	N/A
EP 733058 A1	September 25, 1996	E	000	N/A
US 5591578 A	January 7, 1997	N/A	018	C12Q001/68
JP 09506510 W	June 30, 1997	N/A	058	C12N015/09
US 5705348 A	January 6, 1998	N/A	022	C12Q001/68
US 5770369 A	June 23, 1998	N/A	000	C12Q001/68
US 5780234 A	July 14, 1998	N/A	000	C12Q001/68
AU 703329 B	March 25, 1999	N/A	000	C07H021/00

INT-CL (IPC): C07H 21/00; C07H 21/02; C07H 21/04; C12N 15/09; C12P 19/34; C12Q 1/68; C12Q 1/70; G01N 33/50; G01N 33/566

ABSTRACTED-PUB-NO: US 5591578A
BASIC-ABSTRACT:

A single stranded (ss) nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: (1) a compsn. comprising first and second ss NA's as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; (2) a double-stran ded (ds) NA compsn. where the first ss NA is hybridised to the second NA; (3) prepn. of a ss NA contg. an electron transfer moiety at the 5' end;(4) prepn. of a ss NA contg. an electron transfer moiety covalently attached to an internal nucleotide by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA; (5) prepn. of a ss NA contg. an electron transfer moiety covalently attached to the 3' terminal;(6) detecting a target sequence in a NA sample by: (a) hybridising a ss NA contg. at least 1 covalently attached electron donor and acceptor moiety to the target sequence to form a hybridisation complex; (b) determining the electron transfer rate between the donor and acceptor in the complex, and (c) comparing the rate with that in the absence of the target sequence as an indicator of the presence/absence of the target; and (7) detecting a target sequence in a NA sample where the target comprises adjacent first and second target domains.

USE - The addn. of the electron donor and acceptor moieties allows selective modification of NAs at specific sites to form complexes that are biomolecular templates capable of transferring electrons over very large distances at extremely fast rates. Their unique structure enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in mol. biology and diagnostic medicine. They are extremely specific and sensitive. The methods allow

the detection of base pain mismatches.
ABSTRACTED-PUB-NO:

US 5705348A EQUIVALENT-ABSTRACTS:

A single-stranded nucleic acid containing one or multiple electron donor moieties and one or multiple electron acceptor moieties, wherein said electron donor and acceptor moieties are transition metal complexes covalently attached to the 2' or 3' position of a ribose of the ribose-phosphate backbone of said nucleic acid, said transition metal selected from the group consisting of Cd, Mg, Cu, Co, Pd, Zn, Fe and Ru, and wherein electron transfer can occur between said electron donor and acceptor moieties when said single stranded nucleic acid is hybridized to a target sequence.

A single stranded (ss) nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: (1) a compsn. comprising first and second ss NA's as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; (2) a double-stran ded (ds) NA compsn. where the first ss NA is hybridised to the second NA; (3) prepn. of a ss NA contg. an electron transfer moiety at the 5' end;(4) prepn. of a ss NA contg. an electron transfer moiety covalently attached to an internal nucleotide by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA; (5) prepn. of a ss NA contg. an electron transfer moiety covalently attached to the 3' terminal;(6) detecting a target sequence in a NA sample by: (a) hybridising a ss NA contg. at least 1 covalently attached electron donor and acceptor moiety to the target sequence to form a hybridisation complex; (b) determining the electron transfer rate between the donor and acceptor in the complex, and (c) comparing the rate with that in the absence of the target sequence as an indicator of the presence/absence of the target; and (7) detecting a target sequence in a NA sample where the target comprises adjacent first and second target domains.

USE - The addn. of the electron donor and acceptor moieties allows selective modification of NAs at specific sites to form complexes that are biomolecular templates capable of transferring electrons over very large distances at extremely fast rates. Their unique structure enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in mol. biology and diagnostic medicine. They are extremely specific and sensitive. The methods allow the detection of base pain mismatches.

US 5770369A

A single stranded (ss) nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: (1) a compsn. comprising first and second ss NA's as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; (2) a double-stran ded (ds) NA compsn. where the first ss NA is hybridised to the second NA; (3) prepn. of a ss NA contg. an electron transfer moiety at the 5' end;(4) prepn. of a ss NA contg. an electron transfer moiety covalently attached to an internal nucleotide by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA; (5) prepn. of a ss NA contg. an electron transfer moiety covalently attached to the 3' terminal;(6) detecting a target sequence in a NA sample by: (a) hybridising a ss NA contg. at least 1 covalently attached electron donor and acceptor moiety to the target sequence to form a hybridisation complex; (b) determining the electron transfer rate between the donor and acceptor in the complex, and (c) comparing the rate with that in the absence of the target sequence as an indicator of the presence/absence of the target; and (7) detecting a target sequence in a NA sample where the target comprises adjacent first and second target domains.

USE - The addn. of the electron donor and acceptor moieties allows selective modification of NAs at specific sites to form complexes that are biomolecular templates capable of transferring electrons over very large distances at extremely fast rates. Their unique structure enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in mol. biology and diagnostic medicine. They are extremely specific and sensitive. The methods allow the detection of base pain mismatches.

US 5780234A

A single stranded (ss) nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: (1) a compsn. comprising first and second ss NA's as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; (2) a double-stran ded (ds) NA compsn. where the first ss NA is hybridised to the second NA; (3) prepn. of a ss NA contg. an electron transfer moiety at the 5' end;(4) prepn. of a ss NA contg. an electron transfer moiety covalently attached to an internal nucleotide by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA; (5) prepn. of a ss NA contg. an electron transfer moiety covalently attached to the 3' terminal;(6) detecting a target sequence in a NA sample by: (a) hybridising a ss NA contg. at least 1 covalently attached electron donor and acceptor moiety to the target sequence to form a hybridisation complex; (b) determining the electron transfer rate between the donor and acceptor in the complex, and (c) comparing the rate with that in the absence of the target sequence as an indicator of the presence/absence of the target; and (7) detecting a target sequence in a NA sample where the target comprises adjacent first and second target domains.

USE - The addn. of the electron donor and acceptor moieties allows selective modification of NAs at specific sites to form complexes that are biomolecular templates capable of transferring electrons over very large distances at extremely fast rates. Their unique structure enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in mol. biology and diagnostic medicine. They are extremely specific and sensitive. The methods allow the detection of base pain mismatches.

WO 9515971A

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Terms	Documents
nucleo?ide same ribose same electron adj1 transfer	14

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Search Results - Record(s) 1 through 10 of 14 returned.

☐ 1. Document ID: US 6096273 A

L1: Entry 1 of 14 File: USPT Aug 1, 2000

US-PAT-NO: 6096273
DOCUMENT-IDENTIFIER: US 6096273 A

TITLE: Electrodes linked via conductive oligomers to nucleic acids

DATE-ISSUED: August 1, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kayyem; Jon F.	Pasadena	CA	N/A	N/A
O'Connor; Stephen D.	Pasadena	CA	N/A	N/A
Gozin; Michael	Pasadena	CA	N/A	N/A
Yu; Changjun	Pasadena	CA	N/A	N/A
Meade; Thomas J.	Altadena	CA	N/A	N/A

US-CL-CURRENT: 422/68.1; 435/283.1, 435/6, 436/501, 536/22.1, 536/25.3

ABSTRACT:

The invention relates to nucleic acids covalently coupled to electrodes via conductive oligomers. More particularly, the invention is directed to the site-selective modification of nucleic acids with electron transfer moieties and electrodes to produce a new class of biomaterials, and to methods of making and using them.

36 Claims, 7 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 8

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 2. Document ID: US 6090933 A

L1: Entry 2 of 14 File: USPT Jul 18, 2000

US-PAT-NO: 6090933
DOCUMENT-IDENTIFIER: US 6090933 A

TITLE: Methods of attaching conductive oligomers to electrodes

DATE-ISSUED: July 18, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
O'Connor; Stephen D.	Pasadena	CA	N/A	N/A
Gozin; Michael	Beer Sheva	N/A	N/A	ILX
Yu; Changjun	Pasadena	CA	N/A	N/A
Meade; Thomas J.	Altadena	CA	N/A	N/A

US-CL-CURRENT: 536/25.3; 422/50, 422/68.1, 435/6

ABSTRACT:

The invention relates to nucleic acids covalently coupled to electrodes via conductive oligomers. More particularly, the invention is directed to the site-selective modification of nucleic acids with electron transfer moieties and electrodes to produce a new class of biomaterials, and to methods of making and using them.

11 Claims, 44 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 39

☐ 3. Document ID: US 6087100 A

L1: Entry 3 of 14 File: USPT Jul 11, 2000

US-PAT-NO: 6087100
DOCUMENT-IDENTIFIER: US 6087100 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: July 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 536/23.1, 536/24.2, 536/24.3, 536/24.31

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

16 Claims, 29 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 4

☐ 4. Document ID: US 6071699 A

L1: Entry 4 of 14 File: USPT Jun 6, 2000

US-PAT-NO: 6071699
DOCUMENT-IDENTIFIER: US 6071699 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 436/149, 436/2, 536/24.3

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

12 Claims, 36 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 8

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. Desc | Image

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☐ 5. Document ID: US 6063573 A

L1: Entry 5 of 14 File: USPT May 16, 2000

US-PAT-NO: 6063573
DOCUMENT-IDENTIFIER: US 6063573 A

TITLE: Cycling probe technology using electron transfer detection

DATE-ISSUED: May 16, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A

US-CL-CURRENT: 435/6; 436/501, 536/22.1, 536/23.1, 536/24.1, 536/24.3, 536/24.31, 536/24.32, 536/24.33, 536/25.3

ABSTRACT:

The invention relates to novel methods and compositions useful in Cycling Probe Technology (CPT) using electron transfer to detect target nucleic acid sequences.

42 Claims, 53 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 48

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw. Desc | Image

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☐ 6. Document ID: US 5952172 A

L1: Entry 6 of 14 File: USPT Sep 14, 1999

US-PAT-NO: 5952172
DOCUMENT-IDENTIFIER: US 5952172 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: September 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	La Canada	CA	N/A	N/A

US-CL-CURRENT: 435/6; 536/24.3, 536/24.31, 536/24.32

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

11 Claims, 27 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 8

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw. Desc | Image

☐ 7. Document ID: US 5874046 A

L1: Entry 7 of 14 File: USPT Feb 23, 1999

US-PAT-NO: 5874046
DOCUMENT-IDENTIFIER: US 5874046 A

TITLE: Biological warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences

DATE-ISSUED: February 23, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Megerle; Clifford A.	Thousand Oaks	CA	N/A	N/A

US-CL-CURRENT: 422/68.1; 422/50, 422/62, 422/63, 422/67, 422/69, 422/82.01, 422/82.02, 435/283.1, 435/285.1, 435/285.2, 435/287.1, 435/287.2, 435/287.3, 435/289.1, 435/29, 435/30, 435/40.5, 435/6, 436/501

ABSTRACT:

A sensor system and method are provided that are capable of the real-time detection of target live microorganisms, such as biological warfare agents. The sensor system includes a highly-sensitive, highly-selective sensor cell that comprises a single-stranded oligonucleic acid sequence that is complementary to a portion of the DNA of a target live microorganism, the oligonucleic acid having been modified with the covalent attachment of electron donor and acceptor moieties. In the presence of the targeted microorganism, hybridization occurs between the modified oligonucleic acid and the microorganism's DNA, such that the electron conductance between the electron transfer moieties greatly increases, thereby providing a means of detecting the presence of the target live microorganism. Aside from the sensor cell, the sensor system also includes an inlet port in the sensor cell wall by which to introduce a sample from the fluid environment into the sensor cell; a cell wall disrupter to release the nucleic acid of the fluid sample into the sensor cell; an electron transfer rate measuring system to gauge the electron transfer rate between the electron transfer moieties of the modified oligonucleic acid; a power source; a microcontroller to analyze the measured electron transfer rate for evidence of hybridization; and a communication system for relaying information regarding the presence or absence of the target live microorganism to the user of the sensor system. It is contemplated that the sensor system, exclusive of a battery and pump pack, will be only slightly larger than a pack of cigarettes and light enough to be comfortably worn and carried by personnel.

13 Claims, 6 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Drawi Desc | Image

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☐ 8. Document ID: US 5824473 A

L1: Entry 8 of 14 File: USPT Oct 20, 1998

US-PAT-NO: 5824473
DOCUMENT-IDENTIFIER: US 5824473 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: October 20, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 435/5, 435/91.2, 536/23.1, 536/24.3, 536/24.33, 536/26.6

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

22 Claims, 35 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 7

☐ 9. Document ID: US 5780234 A

L1: Entry 9 of 14 File: USPT Jul 14, 1998

US-PAT-NO: 5780234
DOCUMENT-IDENTIFIER: US 5780234 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: July 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 435/5, 435/91.1, 435/91.2, 536/23.1, 536/24.3, 536/24.32, 536/24.33, 536/26.6

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

21 Claims, 30 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 4

☐ 10. Document ID: US 5770369 A

L1: Entry 10 of 14 File: USPT Jun 23, 1998

US-PAT-NO: 5770369
DOCUMENT-IDENTIFIER: US 5770369 A

TITLE: Nucleic acid mediated electron transfer

DATE-ISSUED: June 23, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meade; Thomas J.	Altadena	CA	N/A	N/A
Kayyem; Jon Faiz	Pasadena	CA	N/A	N/A
Fraser; Scott E.	Newport Beach	CA	N/A	N/A

US-CL-CURRENT: 435/6; 435/287.2, 435/5, 435/91.1, 435/91.2, 536/23.1, 536/24.3, 536/24.33, 536/25.3, 536/26.6

ABSTRACT:

The present invention provides for the selective covalent modification of nucleic acids with redox active moieties such as transition metal complexes. Electron donor and electron acceptor moieties are covalently bound to the ribose-phosphate backbone of a nucleic acid at predetermined positions. The resulting complexes represent a series of new derivatives that are bimolecular templates capable of transferring electrons over very large distances at extremely fast rates. These complexes possess unique structural features which enable the use of an entirely new class of bioconductors and photoactive probes.

27 Claims, 20 Drawing figures Exemplary Claim Number: 1
Number of Drawing Sheets: 8

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

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Terms	Documents
nucleo?ide same ribose same electron adj1 transfer	14

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Terms	Documents
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Database: US Patents Full-Text Database; JPO Abstracts Database; EPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Refine Search: nucleo?ide same ribose same electron adj1 transfer Clear

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***WIPO/PCT Patent Flltext (File 349)

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***Datamonitor Market Reearch (File 761)
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? s (nucleotide? or nucleoside?)(9n)electron(2w)transfer


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   s (nucleotide? or nucleoside?)(9n)electron(2w)transfer

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             63     5: Biosis Previews(R)_1969-2000/Aug W2
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          8      8: Ei Compendex(R)_1970-2000/Jul W3
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        157     34: SciSearch(R) Cited Ref Sci_1990-2000/Aug W1
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          1     44: Aquatic Sci&Fish Abs_1978-2000/Aug
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         36     73: EMBASE_1974-2000/Jul W3
         40     76: Life Sciences Collection_1982-2000/Jun
          8     94: JICST-EPlus_1985-2000/Apr W1
         17     98: General Sci Abs/Full-Text_1984-2000/Jul
         10     99: Wilson Appl. Sci & Tech Abs_1983-2000/Jul
          9    103: Energy SciTec_1974-2000/Jun B2
          2    143: Biol. & Agric. Index_1983-2000/Jul
        125    144: Pascal_1973-2000/Aug W1
          3    149: TGG Health&Wellness DB(SM)_1976-2000/Aug W1
         17    154: MEDLINE(R)_1993-2000/Oct W1
         46    155: MEDLINE(R)_1966-2000/Oct W1
         12    156: Toxline(R)_1965-2000/Jul
          1    161: Occ.Saf.& Hth._1973-1998/Q3
          6    172: EMBASE Alert_2000/Jul W2
Examined  50 files
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          2    315: ChemEng & Biotec Abs_1970-2000/Jul
          7    357: Derwent Biotechnology Abs_1982-2000/Aug B2
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N16             7    357: Derwent Biotechnology Abs_1982-2000/Aug B2
N17             6     10: AGRICOLA_70-2000/Aug
N18             6    172: EMBASE Alert_2000/Jul W2
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     $2.75  Estimated cost this search
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Hilight option is not available in file(s) 399
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          164112  NUCLEOSIDE?
         3171917  ELECTRON
         1481879  TRANSFER
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? s s1(9n)ribose

             676  S1
           51835  RIBOSE
      S2       0  S1(9N)RIBOSE
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             676  S1
           51835  RIBOSE
      S3       0  S1(15N)RIBOSE
? s s1(12n)transfer(2w)(moiety or group)

             676  S1
         1481879  TRANSFER
          148805  MOIETY
         3824055  GROUP
      S4       2  S1(12N)TRANSFER(2W)(MOIETY OR GROUP)
? rd

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      S5       2  RD (unique items)
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 5/5/1     (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs
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0207893  DBA Accession No.: 97-03014    PATENT
Nucleic acids comprising electron transfer moieties - DNA probe
    hybridization method with improved signal-to-noise ratio
AUTHOR: Meade T J;  Kayyem J F;  Fraser S E
CORPORATE SOURCE: Pasadena, CA, USA.
PATENT ASSIGNEE: California-Inst.Technol.  1996
PATENT NUMBER: WO 9640712  PATENT DATE: 961219  WPI ACCESSION NO.:
    97-099909  (9709)
PRIORITY APPLIC. NO.: US 475051  APPLIC. DATE: 950607
NATIONAL APPLIC. NO.: WO 96US9769  APPLIC. DATE: 960607
LANGUAGE: English
ABSTRACT:  A new composition contains an ss nucleic acid (NA) with at least
    1  electron  donor  moiety  and  at  least  1 electron acceptor moiety,
    covalently attached to the NA at terminal bases or ribose residues. The
    moieties  may  be  transition  metal  complexes,  electrodes or organic
    compounds.  A new method for target NA detection involves hybridization
    of  the  new NA to the target to form a complex, and detecting electron
```

transfer. Donor and acceptor moieties may be on separate probes. A new oligonucleotide contains a 1st 2'-amino-modified nucleoside covalently attached to a solid adsorbent, additional nucleosides covalently attached at the 5'-position, and a 2nd 2'-amino-modified nucleoside, and may be produced by the phosphoramidite method. Rapid electron transfer rates resulting from the new method mean that time resolution can greatly enhance the signal-to-noise ratio of monitors based on absorbance, fluorescence and electronic current. A 2-4 order of magnitude improvement in signal-to-noise may be achieved by amplifying signals of particular delays, e.g. through pulsed initiation and lock-in amplifiers. (66pp)
DESCRIPTORS: new DNA probe hybridization method, %oligonucleotide% analog with %electron% %transfer% %moiety%, bioconductor (Vol.16, No.6)
SECTION: GENETIC ENGINEERING AND FERMENTATION-Nucleic Acid Technology (A1)

5/5/2 (Item 2 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs

0183450 DBA Accession No.: 95-10271 PATENT
Single stranded nucleic acids containing electron donor and acceptor moieties - useful as bioconductor and diagnostic DNA probe or RNA probe
AUTHOR: Meade T J; Kayyem J F; 'Fraser S E
PATENT ASSIGNEE: California-Inst.Technol. 1995
PATENT NUMBER: WO 9515971 PATENT DATE: 950615 WPI ACCESSION NO.: 95-224283 (9529)
PRIORITY APPLIC. NO.: US 166036 APPLIC. DATE: 931210
NATIONAL APPLIC. NO.: WO 94US13893 APPLIC. DATE: 941205
LANGUAGE: English
ABSTRACT: An ss nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: i. a composition consisting of 1st and 2nd ss NAs as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; ii. a ds NA composition where the 1st ss NA is hybridized to the 2nd NA; iii. preparation of an ss NA containing an electron %transfer% %moiety% at the 5' end; iv. preparation of an ss Na containing an %electron% %transfer% %moiety% covalently attached to an internal %nucleotide% by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA and carrying out steps from (iii.); v. preparation of an ss NA containing an electron transfer moiety covalently attached to the 3'-terminal; and vi. detecting a target sequence in an NA sample where the target comprises adjacent 1st and 2nd target domains. The unique structure of the ss NA enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in molecular biology and diagnostic medicine. The method allows the detection of base pair mismatches. (59pp)
DESCRIPTORS: single-strand DNA, RNA containing electron donor, electron acceptor moiety, covalent attachment, appl. bioconductor, DNA probe, RNA probe, base pair mismatch det. (Vol.14, No.17)
SECTION: PHARMACEUTICALS-Clinical Genetic Techniques; GENETIC ENGINEERING AND FERMENTATION-Nucleic Acid Technology (D7,A1)
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Set	Items	Description
S1	676	(NUCLEOTIDE? OR NUCLEOSIDE?)(9N)ELECTRON(2W)TRANSFER
S2	0	S1(9N)RIBOSE
S3	0	S1(15N)RIBOSE
S4	2	S1(12N)TRANSFER(2W)(MOIETY OR GROUP)

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S5          2   RD (unique items)
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         3171917  ELECTRON
          562764  DONOR?
      S6       8  S1(12N)ELECTRON(2W)DONOR?
? s s6 not s5

               8  S6
               2  S5
      S7       8  S6 NOT S5
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 8/5/1     (Item 1 from file: 34)
DIALOG(R)File  34:SciSearch(R) Cited Ref Sci
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02085813   Genuine Article#: KA896   Number of References: 79
Title: PHTHALATE DIOXYGENASE REDUCTASE - A MODULAR STRUCTURE FOR
    ELECTRON-TRANSFER FROM PYRIDINE-NUCLEOTIDES TO [2FE-2S]
Author(s): CORRELL CC; BATIE CJ; BALLOU DP; LUDWIG ML
Corporate Source: YALE UNIV,DEPT MOLEC BIOPHYS & BIOCHEM/NEW
    HAVEN//CT/06511; UNIV MICHIGAN,DEPT BIOL CHEM/ANN ARBOR//MI/48109; UNIV
    MICHIGAN,DIV BIOPHYS RES/ANN ARBOR//MI/48109
Journal: SCIENCE, 1992, V258, N5088 (DEC 4), P1604-1610
ISSN: 0036-8075
Language: ENGLISH   Document Type: ARTICLE
Geographic Location: USA
Subfile: SciSearch; CC PHYS--Current Contents, Physical, Chemical & Earth
    Sciences; CC LIFE--Current Contents, Life Sciences; CC AGRI--Current
    Contents, Agriculture, Biology & Environmental Sciences
Journal Subject Category: MULTIDISCIPLINARY SCIENCES
Abstract: Phthalate dioxygenase reductase (PDR) is a prototypical
    iron-sulfur flavoprotein (36 kilodaltons) that utilizes flavin
    mononucleotide (FMN) to mediate %electron% %transfer% from the two-
    %electron% %donor%, reduced nicotinamide adenine %nucleotide% (NADH),
    to the one-electron acceptor, [2Fe-2S]. The crystal structure of
    oxidized PDR from Pseudomonas cepacia has been analyzed at 2.0 angstrom
    resolution resolution; reduced PDR and pyridine nucleotide complexes
    have been analyzed at 2.7 angstrom resolution. NADH, FMN, and the
    [2Fe-2S] cluster, bound to distinct domains, are brought together near
    a central cleft in the molecule, with only 4.9 angstroms separating the
    flavin 8-methyl and a cysteine sulfur ligated to iron. The domains that
    bind FMN and [2Fe-2S] are packed so that the flavin ring and the plane
    of the [2Fe-2S] core are approximately perpendicular. The [2Fe-2S]
    group is bound by four cysteines in a site resembling that in plant
    ferredoxins, but its redox potential (-174 millivolts at pH 7.0) is
    much higher than the potentials of plant ferredoxins. Structural and
    sequence similarities assign PDR to a distinct family of flavoprotein
    reductases, all related to ferredoxin NADP+-reductase.
Identifiers--KeyWords Plus: FERREDOXIN-NADP+ REDUCTASE;
    GLUTATHIONE-REDUCTASE; CRYSTALLOGRAPHIC REFINEMENT; 3-DIMENSIONAL
    STRUCTURE; PSEUDOMONAS-CEPACIA; 2-IRON FERREDOXINS; SPINACH FERREDOXIN;
    PROTEIN-STRUCTURE; ATOMIC-STRUCTURE; RESOLUTION
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Research Fronts: 90-1465 002 (PHOTOINDUCED LONG-RANGE INTRAMOLECULAR ELECTRON-TRANSFER; DYNAMICS OF SOLVENT REORGANIZATION; CHARGE RECOMBINATION)
90-1638 002 (PROTEIN FOLDING; STAPHYLOCOCCAL NUCLEASE; HIGH-RESOLUTION REFINEMENT)
90-0733 001 (X-RAY STRUCTURE OF POLYNUCLEAR RUTHENIUM CARBONYL HYDRIDES; AZINYL SULFIDES)
90-2485 001 (PROTEIN SECONDARY STRUCTURE PREDICTION; PORCINE PEPSIN AT 2.3-A RESOLUTION; INTERACTION OF METAL-IONS)
90-2865 001 (KEY RESIDUES IN PROTEIN TERTIARY STRUCTURE; GLOBAL ENERGY MINIMIZATION; ANTIBODY MODELING)
90-6963 001 (TRYPANOTHIONE REDUCTASE; GLUTATHIONE DISULFIDE; DIHYDROLIPOAMIDE DEHYDROGENASES; SITE-DIRECTED MUTAGENESIS; CRYSTALLOGRAPHIC DATA)
90-8373 001 (PURINE BIOSYNTHESIS; CATALYTIC ANTIBODIES; ALDEHYDE-OXIDIZING ENZYMES IN AN ADULT MOTH)
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YAMAGUCHI M, 1981, V256, P6783, J BIOL CHEM
ZIPPLIES MF, 1984, P21, FLAVINS FLAVOPROTEIN

8/5/2 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

05902650 PASCAL No.: 85-0087704
Interaction of respiratory and photosynthetic electron transport, and evidence for menbrane-bound pyridine-nucleotide dehydrogenases in Anabaena variabilis
STURZL E; SCHERER S; BOGER P
Univ. Konstanz, lehrstuhl physiologie biochemie pflanzen, Konstanz 7750, Federal Republic of Germany
Journal: Physiologia Plantarum, 1984, 60 (4) 479-483
ISSN: 0031-9317 Availability: CNRS-2583
No. of Refs.: 26 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Denmark
Language: English

English Descriptors: %Electron% %transfer%; Cell respiration; Photosynthesis; Cyanobacteria; NADPH; NADH; %Electron% %donor%; Nicotinamide %nucleotide% enzyme; Membrane enzyme
Broad Descriptors: Bacteria; Bacterie; Bacteria

French Descriptors: Transfert electron; Respiration cellulaire; Photosynthese; Cyanobacteria; NADPH; NADH; Donneur electron; Enzyme a nicotinamide nucleotide; Enzyme membranaire; Anabaena variabilis

Classification Codes: 002A04F08

8/5/3 (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

130192994 CA: 130(15)192994z PATENT
Biological warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences
INVENTOR(AUTHOR): Megerle, Clifford A.
LOCATION: USA
ASSIGNEE: Raytheon Company
PATENT: United States ; US 5874046 A DATE: 19990223
APPLICATION: US 740539 (19961030)
PAGES: 11 pp. CODEN: USXXAM LANGUAGE: English CLASS: 422068100; G01N-027/30A; G01N-027/327B; G01N-027/406B
SECTION:
CA204001 Toxicology
IDENTIFIERS: biol warfare agent sensor ruthenium terminated oligonucleotide
DESCRIPTORS:
Bioelectrodes... Biological warfare agents... Oligonucleotides...
biol. warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences
CAS REGISTRY NUMBERS:
102-54-5D 7440-18-8D complexes, biol. warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences
220870-62-2 220870-63-3 220870-64-4 electron transfer acceptor; biol. warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences
220870-61-1 electron transfer donor; biol. warfare agent sensor system employing ruthenium-terminated oligonucleotides complementary to target live agent DNA sequences

8/5/4 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

08765593 BIOSIS NO.: 199395054944
Phthalate dioxygenase reductase: A modular structure for electron transfer from pyridine nucleotides to iron sulfur.
AUTHOR: Correll Carl C(a); Batie Christopher J; Ballou David P; Ludwig Martha L
AUTHOR ADDRESS: (a)Dep. Mol. Biophysics and Biochemistry, Yale Univ., New Haven, Conn. 06511
1992
JOURNAL: Science (Washington D C) 258 (5088):p1604-1610 1992
ISSN: 0036-8075
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Phthalate dioxygenase reductase (PDR) is a prototypical iron-sulfur flavoprotein (36 kilodaltons) that utilizes flavin mononucleotide (FMN) to mediate %electron% %transfer% from the two-%electron% %donor%, reduced nicotinamide adenine %nucleotide% (NADH), to the one-electron acceptor, (2Fe-2S). The crystal structure of oxidized PDR from Pseudomonas cepacia has been analyzed at 2.0 angstrom resolution; reduced PDR and pyridine nucleotide complexes have been analyzed at 2.7 angstrom resolution. NADH, FMN, and the (2Fe-2S) cluster, bound to distinct domains, are brought together near a central cleft in the molecule, with only 4.9 angstroms separating the flavin 8-methyl and a cysteine sulfur ligated to iron. The domains that bind FMN and (2FE-2S) are packed so that the flavin ring and the plane of the (2Fe-2S) core are approximately perpendicular. The (2F-2S) group is bound by four cysteines in a site resembling that in plant ferredoxins, but its redox potential (-174 millivolts at pH 7.0) is much higher than the potentials of plant ferredoxins. Structural and sequence similarities assign PDR to a distinct family of flavoprotein reductases, all related to ferredoxin NADP+-reductase.

REGISTRY NUMBERS: 107309-11-5: PHTHALATE DIOXYGENASE REDUCTASE; 110-86-1: PYRIDINE; 58-68-4: NADH; 146-17-8: FMN; 52-90-4: CYSTEINE; 9029-33-8: FERREDOXIN NADP REDUCTASE
DESCRIPTORS:
MAJOR CONCEPTS: Bioenergetics (Biochemistry and Molecular Biophysics); Enzymology (Biochemistry and Molecular Biophysics); Physiology
BIOSYSTEMATIC NAMES: Pseudomonadaceae--Eubacteria, Bacteria
ORGANISMS: Pseudomonas cepacia (Pseudomonadaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): bacteria; eubacteria; microorganisms
CHEMICALS & BIOCHEMICALS: PHTHALATE DIOXYGENASE REDUCTASE; PYRIDINE; NADH; FMN; CYSTEINE; FERREDOXIN NADP REDUCTASE
MISCELLANEOUS TERMS: CYSTEINE; FERREDOXIN NADP REDUCTASE; FMN; NADH
CONCEPT CODES:
10510 Biophysics-Bioenergetics: Electron Transport and Oxidative Phosphorylation
10806 Enzymes-Chemical and Physical
31000 Physiology and Biochemistry of Bacteria
10062 Biochemical Studies-Nucleic Acids, Purines and Pyrimidines
10064 Biochemical Studies-Proteins, Peptides and Amino Acids
10069 Biochemical Studies-Minerals
BIOSYSTEMATIC CODES:
06508 Pseudomonadaceae (1992-)

8/5/5 (Item 1 from file: 76)
DIALOG(R)File 76:Life Sciences Collection

00553722 0243434
Aflatoxin Inhibition of Reversed Electron Transfer in Rat Liver Mitochondria In Vitro.
Obidoa, O.; Obonna, E.E.
Dep. Biochem., Univ. Nigeria, Nsukka, Nigeria
BIOCHEM. MED. vol. 26, no. 1, pp. 1-7 (1981.)
DOCUMENT TYPE: Journal article LANGUAGE: ENGLISH
SUBFILE: Toxicology Abstracts

The authors have investigated the dose-dependence effects of AFB sub(1), and AFG sub(1), the most potent aflatoxin hepatocarcinogens, on

energy-linked reduction of endogenous nicotinamide %nucleotides% by reversed %electron% %transfer% using succinate and vitamin K sub(3) as %electron% %donors% in isolated rat liver mitochondria.

DESCRIPTORS: aflatoxin B1; aflatoxin G1; electron transport; mitochondria; liver; rats
IDENTIFIERS: inhibition
SECTION HEADING: 24171 --Microbial
? s s1(12n)transfer(5n)attach?

```
            676  S1
        1481879  TRANSFER
         409030  ATTACH?
     S9       6  S1(12N)TRANSFER(5N)ATTACH?
? ds
```

```
Set     Items   Description
S1        676   (NUCLEOTIDE? OR NUCLEOSIDE?)(9N)ELECTRON(2W)TRANSFER
S2          0   S1(9N)RIBOSE
S3          0   S1(15N)RIBOSE
S4          2   S1(12N)TRANSFER(2W)(MOIETY OR GROUP)
S5          2   RD (unique items)
S6          8   S1(12N)ELECTRON(2W)DONOR?
S7          8   S6 NOT S5
S8          5   RD (unique items)
S9          6   S1(12N)TRANSFER(5N)ATTACH?
? s s9 not s7

              6  S9
              8  S7
    S10       6  S9 NOT S7
? rd

...completed examining records
    S11       4  RD (unique items)
? t 11/5/all
```

11/5/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

01344251 Genuine Article#: GQ818 Number of References: 20
Title: DETERMINATION OF BROMIDE PRODUCTION IN RADIOLYSIS OF NUCLEOBASES, NUCLEOSIDES, AND NUCLEOTIDES USING HPLC
Author(s): YE MY
Corporate Source: MANTECH ENVIRONM TECHNOL INC,POB 1198/ADA//OK/74820; BATTELLE MEM INST,PACIFIC NW LABS,DEPT BIOL & CHEM/RICHLAND//WA/99352
Journal: JOURNAL OF LIQUID CHROMATOGRAPHY, 1991, V14, N19, P3497-3511
Language: ENGLISH Document Type: ARTICLE
Geographic Location: USA
Subfile: SciSearch; CC PHYS--Current Contents, Physical, Chemical & Earth Sciences; CC LIFE--Current Contents, Life Sciences
Journal Subject Category: CHEMISTRY, ANALYTICAL
Abstract: Determination of the formation of bromide ions in intermolecular %electron% %transfer% in 5-bromouracil (BrUr) and its %nucleoside% and %nucleotide% derivatives with nucleobases, nucleosides, and nucleotides was carried out with high performance liquid chromatography (HPLC). Initial electron %attachment%, at high concentration of nucleobases,

%nucleosides%, or %nucleotides%, is mainly on these molecules; intermolecular %electron% %transfer% then occurs between theses molecules and BrUr and the derivatives. The elimination of bromide ions from BrUr and the derivatives then follows. It is concluded that in neutral and basic solution (pH 6 to 10) there is a significant electron transfer from thymine (T), uracil (Ur), thymidine (dT), 2'-deoxyuridine (dU), or 2'-deoxyuridine-5'-monophosphate (dUMP) to BrUr and the derivatives. For example, at a concentration ratio of BrUr and T of 1:100, the yield of bromide ions is about 1.6, amounting to 59% of hydrated electron (e(aq)-) yield in the radiolysis, in which the pseudo-first-order rate constants predict a bromide yield of less than 0.03.

Identifiers--KeyWords Plus: ELECTRON MIGRATION; INCORPORATED 5-BUDR; AQUEOUS-SOLUTIONS; LOW-TEMPERATURES; ENERGY-TRANSFER; MODEL SYSTEM; HYDRATED DNA; 5-BROMOURACIL; COLLAGEN; THYMINE

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VANLITH D, 1986, V82, P2945, J CHEM SOC FARAD T 1
WAGNER BO, 1975, V79, P589, BER BUNSEN PHYS CHEM
WHILLANS DW, 1975, V414, P193, BIOCHIM BIOPHYS ACTA
ZIMBRICK JD, 1969, V16, P505, INT J RADIAT BIOL

11/5/2 (Item 1 from file: 76)

DIALOG(R)File 76:Life Sciences Collection

00985314 1414523

Biochemistry and physiology of aerobic carbon monoxide-utilizing bacteria.

Meyer, O.; Jacobitz, S.; Krueger, B.
Inst. Mikrobiol., Georg-August-Univ. Goettingen, Grisebachstr. 8, D-3400 Goettingen, FRG

MICROBIAL METABOLISM OF C sub(1) COMPOUNDS.
Dodd, G.A.; Dijkhuizen, L.; Tabita, F.R. (eds.)
FEMS MICROBIOL. REV. vol. 39, no. 3 pp. 161-179 (1986.)
DOCUMENT TYPE: Journal article; Review article LANGUAGE: ENGLISH
NOTES: Special issue.
SUBFILE: Microbiology Abstracts Section B: Bacteriology

The use of CO as a growth substrate by aerobic CO-oxidizing (carboxydotrophic) bacteria requires some features not obvious in other bacteria. These are the presence of the enzyme CO dehydrogenase, a branched respiratory chain with an alternative CO-insensitive terminal oxidase (cytochrome b sub(653)) and formation of reduced pyridine %nucleotides% by a pmf-driven reversed %electron% %transfer%. Immunocytochemical

localization studies revealed that CO dehydrogenase is %attached% to the inner aspect of the cytoplasmic membrane of Pseudomonas carboxydovorans . The enzyme is a molybdo iron-sulfur flavoprotein containing bactopterin as the organic portion of the molybdenum cofactor.

DESCRIPTORS: Pseudomonas carboxydovorans; carbon monoxide; carbon monoxide dehydrogenase
IDENTIFIERS: biochemical characteristics; physiology
SECTION HEADING: 02728 --Enzymes

11/5/3 (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs

0207893 DBA Accession No.: 97-03014 PATENT
Nucleic acids comprising electron transfer moieties - DNA probe hybridization method with improved signal-to-noise ratio
AUTHOR: Meade T J; Kayyem J F; Fraser S E
CORPORATE SOURCE: Pasadena, CA, USA.
PATENT ASSIGNEE: California-Inst.Technol. 1996
PATENT NUMBER: WO 9640712 PATENT DATE: 961219 WPI ACCESSION NO.: 97-099909 (9709)
PRIORITY APPLIC. NO.: US 475051 APPLIC. DATE: 950607
NATIONAL APPLIC. NO.: WO 96US9769 APPLIC. DATE: 960607
LANGUAGE: English
ABSTRACT: A new composition contains an ss nucleic acid (NA) with at least 1 electron donor moiety and at least 1 electron acceptor moiety, covalently attached to the NA at terminal bases or ribose residues. The moieties may be transition metal complexes, electrodes or organic compounds. A new method for target NA detection involves hybridization of the new NA to the target to form a complex, and detecting electron transfer. Donor and acceptor moieties may be on separate probes. A new oligonucleotide contains a 1st 2'-amino-modified nucleoside covalently %attached% to a solid adsorbent, additional nucleosides covalently %attached% at the 5'-position, and a 2nd 2'-amino-modified %nucleoside% , and may be produced by the phosphoramidite method. Rapid %electron% %transfer% rates resulting from the new method mean that time resolution can greatly enhance the signal-to-noise ratio of monitors based on absorbance, fluorescence and electronic current. A 2-4 order of magnitude improvement in signal-to-noise may be achieved by amplifying signals of particular delays, e.g. through pulsed initiation and lock-in amplifiers. (66pp)
DESCRIPTORS: new DNA probe hybridization method, oligonucleotide analog with electron transfer moiety, bioconductor (Vol.16, No.6)
SECTION: GENETIC ENGINEERING AND FERMENTATION-Nucleic Acid Technology (A1)

11/5/4 (Item 2 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs

0183450 DBA Accession No.: 95-10271 PATENT
Single stranded nucleic acids containing electron donor and acceptor moieties - useful as bioconductor and diagnostic DNA probe or RNA probe
AUTHOR: Meade T J; Kayyem J F; Fraser S E
PATENT ASSIGNEE: California-Inst.Technol. 1995
PATENT NUMBER: WO 9515971 PATENT DATE: 950615 WPI ACCESSION NO.: 95-224283 (9529)
PRIORITY APPLIC. NO.: US 166036 APPLIC. DATE: 931210

NATIONAL APPLIC. NO.: WO 94US13893 APPLIC. DATE: 941205
LANGUAGE: English
ABSTRACT: An ss nucleic acid (NA) contains at least 1 electron donor moiety and at least 1 electron acceptor moiety, both being covalently attached to the NA. Also claimed are: i. a composition consisting of 1st and 2nd ss NAs as above, where the donor and acceptor are covalently linked to the ribose-phosphate backbone; ii. a ds NA composition where the 1st ss NA is hybridized to the 2nd NA; iii. preparation of an ss NA containing an electron %transfer% moiety at the 5' end; iv. preparation of an ss Na containing an %electron% %transfer% moiety covalently %attached% to an internal %nucleotide% by incorporating a modified nucleotide dimer into the growing NA to form a modified ss NA and carrying out steps from (iii.); v. preparation of an ss NA containing an electron transfer moiety covalently attached to the 3'-terminal; and vi. detecting a target sequence in an NA sample where the target comprises adjacent 1st and 2nd target domains. The unique structure of the ss NA enables their use as a new class of bioconductors and diagnostic probes. The probes are useful in molecular biology and diagnostic medicine. The method allows the detection of base pair mismatches. (59pp)
DESCRIPTORS: single-strand DNA, RNA containing electron donor, electron acceptor moiety, covalent attachment, appl. bioconductor, DNA probe, RNA probe, base pair mismatch det. (Vol.14, No.17)
SECTION: PHARMACEUTICALS-Clinical Genetic Techniques; GENETIC ENGINEERING AND FERMENTATION-Nucleic Acid Technology (D7,A1)
? ds

Set	Items	Description
S1	676	(NUCLEOTIDE? OR NUCLEOSIDE?)(9N)ELECTRON(2W)TRANSFER
S2	0	S1(9N)RIBOSE
S3	0	S1(15N)RIBOSE
S4	2	S1(12N)TRANSFER(2W)(MOIETY OR GROUP)
S5	2	RD (unique items)
S6	8	S1(12N)ELECTRON(2W)DONOR?
S7	8	S6 NOT S5
S8	5	RD (unique items)
S9	6	S1(12N)TRANSFER(5N)ATTACH?
S10	6	S9 NOT S7
S11	4	RD (unique items)

```
? s s1(15n)ribose

            676  S1
          51835  RIBOSE
     S12      0  S1(15N)RIBOSE
? s electron(2w)(5n)attach(5n)ribose

>>>Operator "(5N)" in invalid position
? s electron(5n)attach?(5n)ribose

         3171917  ELECTRON
          409030  ATTACH?
           51835  RIBOSE
     S13      5  ELECTRON(5N)ATTACH?(5N)RIBOSE
? s s13 not s6

               5  S13
               8  S6
     S14       5  S13 NOT S6
? rd
```

...completed examining records
S15 3 RD (unique items)
? t 15/5/all

15/5/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

04775543 Genuine Article#: UG704 Number of References: 18
Title: REACTION INTERMEDIATES OF A DIHYDROPYRIDINE DERIVATIVE OF 2',3'-DIDEOXYCYTIDINE RELATED TO AIDS DEMENTIA STUDIED BY LASER FLASH-PHOTOLYSIS
Author(s): KAWCZYNSKI W; CZOCHRALSKA B; LINDQVIST L; TORRENCE PF
Corporate Source: UNIV WARSAW,INST EXPTL PHYS,DEPT BIOPHYS,93 ZWIRKI & WIGURY ST/PL-02089 WARSAW//POLAND/; UNIV WARSAW,INST EXPTL PHYS,DEPT BIOPHYS/PL-02089 WARSAW//POLAND/; UNIV PARIS 11,CNRS,PHOTOPHYS MOLEC LAB/F-91405 ORSAY//FRANCE/; NIDDKD,SECT BIOMED CHEM,MED CHEM LAB,NIH/BETHESDA//MD/20892
Journal: BIOELECTROCHEMISTRY AND BIOENERGETICS, 1996, V39, N2 (MAR), P 263-266
ISSN: 0302-4598
Language: ENGLISH Document Type: ARTICLE
Geographic Location: POLAND; FRANCE; USA
Subfile: SciSearch; CC LIFE--Current Contents, Life Sciences
Journal Subject Category: BIOCHEMISTRY & MOLECULAR BIOLOGY
Abstract: A derivative of 2',3'-dideoxycytidine (ddC), carrying one 1,4-dihydro-1-methyl-3-pyridinyl-carbonyl group at the cytidine exocyclic amino group and one at the ribose 5-hydroxyl group, was exposed in water-ethanol solution to high-power pulsed laser emission at a wavelength of 354.7 nm. Measurement of the transient absorption spectra. with nanosecond time resolution shows that the photoejection of an electron occurs due to stepwise two-photon absorption by the dihydropyridine via its fluorescent state. The spectrum of the cation radical formed in this reaction was determined, together with that of the neutral radical appearing following deprotonation of the cation. The %electron% is apparently abstracted only from the pyridine group %attached% to the %ribose%, since a comparative study on ddC carrying a dihydropyridine only at the exocyclic amino group showed no evidence for photoionization in the same experimental conditions.
Descriptors--Author Keywords: CYTIDINE DERIVATIVE ; FLASH PHOTOLYSIS ; AIDS DEMENTIA ; RADICAL INTERMEDIATE
Identifiers--KeyWords Plus: HUMAN IMMUNODEFICIENCY VIRUS; CHEMICAL DELIVERY SYSTEM; AQUEOUS-SOLUTION; ZIDOVUDINE; EXCITATION; INVITRO; METABOLISM; MECHANISM; NADH; NM
Research Fronts: 94-0087 001 (HUMAN-IMMUNODEFICIENCY-VIRUS TYPE-1; NONNUCLEOSIDE REVERSE-TRANSCRIPTASE INHIBITORS; ZIDOVUDINE RESISTANCE MUTATIONS; ANTIRETROVIRAL THERAPY)
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TORRENCE PF, 1993, V36, P529, J MED CHEM
VISSER AJWG, 1981, V33, P35, PHOTOCHEM PHOTOBIOL

15/5/2 (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)

133027754 CA: 133(3)27754a JOURNAL
Electron-Stimulated Desorption of H- from Condensed-Phase Deoxyribose Analogues: Dissociative Electron Attachment versus Resonance Decay into Dipolar Dissociation
AUTHOR(S): Antic, D.; Parenteau, L.; Sanche, L.
LOCATION: Groupe du Conseil de Recherches Medicales du Canada en Sciences des Radiations Faculte de Medecine, Universite de Sherbrooke, Sherbrooke, PQ, Can., J1H 5N4
JOURNAL: J. Phys. Chem. B DATE: 2000 VOLUME: 104 NUMBER: 19 PAGES: 4711-4716 CODEN: JPCBFK ISSN: 1089-5647 PUBLISHER ITEM IDENTIFIER: 1089-5647(00)00206-6 LANGUAGE: English PUBLISHER: American Chemical Society
SECTION:
CA206002 General Biochemistry
IDENTIFIERS: electron stimulated desorption deoxyribose analog DNA
DESCRIPTORS:
DNA...
deoxyribose backbone; electron-stimulated desorption of H- from condensed-phase deoxyribose analogs: dissociative electron attachment vs. resonance decay into dipolar dissocn.
Desorption...
electron-beam-induced; electron-stimulated desorption of H- from condensed-phase deoxyribose analogs: dissociative electron attachment vs. resonance decay into dipolar dissocn.
Dissociative electron capture...
electron-stimulated desorption of H- from condensed-phase deoxyribose analogs: dissociative electron attachment vs. resonance decay into dipolar dissocn.
CAS REGISTRY NUMBERS:
97-99-4 453-20-3 electron-stimulated desorption of H- from condensed-phase deoxyribose analogs: dissociative electron attachment vs. resonance decay into dipolar dissocn.
109-99-9 processes, electron-stimulated desorption of H- from condensed-phase deoxyribose analogs: dissociative electron attachment vs. resonance decay into dipolar dissocn.

15/5/3 (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs

0207893 DBA Accession No.: 97-03014 PATENT
Nucleic acids comprising electron transfer moieties - DNA probe hybridization method with improved signal-to-noise ratio
AUTHOR: Meade T J; Kayyem J F; Fraser S E
CORPORATE SOURCE: Pasadena, CA, USA.
PATENT ASSIGNEE: California-Inst.Technol. 1996

PATENT NUMBER: WO 9640712 PATENT DATE: 961219 WPI ACCESSION NO.: 97-099909 (9709)
PRIORITY APPLIC. NO.: US 475051 APPLIC. DATE: 950607
NATIONAL APPLIC. NO.: WO 96US9769 APPLIC. DATE: 960607
LANGUAGE: English
ABSTRACT: A new composition contains an ss nucleic acid (NA) with at least 1 electron donor moiety and at least 1 %electron% acceptor moiety, covalently %attached% to the NA at terminal bases or %ribose% residues. The moieties may be transition metal complexes, electrodes or organic compounds. A new method for target NA detection involves hybridization of the new NA to the target to form a complex, and detecting electron transfer. Donor and acceptor moieties may be on separate probes. A new oligonucleotide contains a 1st 2'-amino-modified nucleoside covalently attached to a solid adsorbent, additional nucleosides covalently attached at the 5'-position, and a 2nd 2'-amino-modified nucleoside, and may be produced by the phosphoramidite method. Rapid electron transfer rates resulting from the new method mean that time resolution can greatly enhance the signal-to-noise ratio of monitors based on absorbance, fluorescence and electronic current. A 2-4 order of magnitude improvement in signal-to-noise may be achieved by amplifying signals of particular delays, e.g. through pulsed initiation and lock-in amplifiers. (66pp)
DESCRIPTORS: new DNA probe hybridization method, oligonucleotide analog with electron transfer moiety, bioconductor (Vol.16, No.6)
SECTION: GENETIC ENGINEERING AND FERMENTATION-Nucleic Acid Technology (A1)
? s electrode(7n)attach?(7n)ribose

```
          412997  ELECTRODE
          409030  ATTACH?
           51835  RIBOSE
     S16       0  ELECTRODE(7N)ATTACH?(7N)RIBOSE
? s ribose(7n)attach?(7n)transfer

           51835  RIBOSE
          409030  ATTACH?
         1481879  TRANSFER
     S17       0  RIBOSE(7N)ATTACH?(7N)TRANSFER
? ds


Set     Items   Description
S1        676   (NUCLEOTIDE? OR NUCLEOSIDE?)(9N)ELECTRON(2W)TRANSFER
S2          0   S1(9N)RIBOSE
S3          0   S1(15N)RIBOSE
S4          2   S1(12N)TRANSFER(2W)(MOIETY OR GROUP)
S5          2   RD (unique items)
S6          8   S1(12N)ELECTRON(2W)DONOR?
S7          8   S6 NOT S5
S8          5   RD (unique items)
S9          6   S1(12N)TRANSFER(5N)ATTACH?
S10         6   S9 NOT S7
S11         4   RD (unique items)
S12         0   S1(15N)RIBOSE
S13         5   ELECTRON(5N)ATTACH?(5N)RIBOSE
S14         5   S13 NOT S6
S15         3   RD (unique items)
S16         0   ELECTRODE(7N)ATTACH?(7N)RIBOSE
S17         0   RIBOSE(7N)ATTACH?(7N)TRANSFER
? s (nucleotide? or nucleoside?)(5n)attach?(5n)electron(2w)transfer
```

```
        1164460  NUCLEOTIDE?
         164112  NUCLEOSIDE?
         409030  ATTACH?
        3171917  ELECTRON
        1481879  TRANSFER
     S18      1  (NUCLEOTIDE? OR
                 NUCLEOSIDE?)(5N)ATTACH?(5N)ELECTRON(2W)TRANSFER
? t 18/5


 18/5/1     (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotechnology Abs
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0183450  DBA Accession No.: 95-10271    PATENT
Single stranded nucleic acids containing electron donor and acceptor
    moieties - useful as bioconductor and diagnostic DNA probe or RNA probe
AUTHOR: Meade T J;  Kayyem J F;  Fraser S E
PATENT ASSIGNEE: California-Inst.Technol.  1995
PATENT NUMBER: WO 9515971  PATENT DATE: 950615  WPI ACCESSION NO.:
    95-224283  (9529)
PRIORITY APPLIC. NO.: US 166036  APPLIC. DATE: 931210
NATIONAL APPLIC. NO.: WO 94US13893  APPLIC. DATE: 941205
LANGUAGE: English
ABSTRACT: An ss nucleic acid (NA) contains at least 1 electron donor moiety
    and at least 1 electron acceptor moiety, both being covalently attached
    to the NA. Also claimed are: i. a composition consisting of 1st and 2nd
    ss  NAs as above, where the donor and acceptor are covalently linked to
    the ribose-phosphate backbone; ii. a ds NA composition where the 1st ss
    NA is hybridized to the 2nd NA; iii. preparation of an ss NA containing
    an  electron transfer moiety at the 5' end; iv. preparation of an ss Na
     containing an %electron% %transfer% moiety covalently %attached% to an
     internal  %nucleotide%  by incorporating a modified %nucleotide% dimer
    into  the  growing  NA  to form a modified ss NA and carrying out steps
    from (iii.); v. preparation of an ss NA containing an electron transfer
    moiety  covalently  attached  to  the  3'-terminal; and vi. detecting a
    target sequence in an NA sample where the target comprises adjacent 1st
    and 2nd target domains. The unique structure of the ss NA enables their
    use  as  a new class of bioconductors and diagnostic probes. The probes
    are  useful  in  molecular  biology and diagnostic medicine. The method
    allows the detection of base pair mismatches. (59pp)
DESCRIPTORS: single-strand DNA, RNA containing electron donor, electron
    acceptor moiety, covalent attachment, appl. bioconductor, DNA probe,
    RNA probe, base pair mismatch det.  (Vol.14, No.17)
SECTION: PHARMACEUTICALS-Clinical Genetic Techniques; GENETIC ENGINEERING
    AND FERMENTATION-Nucleic Acid Technology  (D7,A1)
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